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Congratulations

In January, a complimentary luncheon is being offered to Mr. T. Makemson, M.B.E., to celebrate the twenty-first anniversary of his appointment as secretary of the Institute of British Foundrymen. It is a well-merited compliment, for under his astute guidance the Institute has gone from strength to strength. The year 1926 was a critical one for the Institute. There was a general strike; the late secretary, Mr. Hollinworth, was bedridden; notice to quit the London office was received; and the financial position was weak. In seeking for a new leader, the Council of the Institute took cognisance of the existing Branch officials. Of those available, Mr. Makemson's record was outstanding. He had already been a member of the Institute for nine years, and as the honorary secretary of the Lancashire Branch, he had built it up to be the largest in the Institute. Even before his appointment, Mr. Makemson was extremely interested in the training of foundry apprentices, and since his appointment this activity has been a major preoccupation. The sterling work he did in establishing, and in many ways supervising, the City and Guilds of London Institutes' examinations is now paying dividends. The incentive provided by these examinations has at the very minimum created a cadre of skilled technicians, upon whom the industry must largely rely for the training of future generations of foundrymen. The wartime report upon the training of foundry personnel and notes for lecturers on foundry practice were produced under his editorship and both have received universal approbation.

A second activity which appealed to Mr. Makemson as being worth while was the creation of international ties between foundrymen. The conferences to which he either chaperoned parties of his members or which he himself managed, gave him ample scope to exercise his genius for intelligent organisation. From Prague to Pittsburgh, "Tom" is recognised as the vital link in the chain of international foundry good will. For the major part of the war, the Institute had but the part-time services of Mr. Makemson, as he was employed in Government service, culminating in his appointment as Director of Iron Castings. His worth was recognised by the award of the M.B.E. The organisation of the Institute was so well-founded that, despite all difficulties, much progress was made. The membership has, during his leadership, grown from a problematic 1,500 to something of the order of 4,200, whilst the centres of activity have also increased. Outstanding, of course, has been the success of the South African Branch, which has brought technology to a vast territory, where none existed before. East Anglia, Bristol and Slough are also benefiting from this expansion.

With the passing of time, Mr. Makemson has developed into a brilliant after-dinner speaker. His histrionic abilities were early recognised; invitations consequent upon this, coupled with week-end council and committee meetings, have served to deprive Mr. Makemson of any chance of enjoying a six-day let alone a five-day week. He has attained great success in his spheres of activities and of those who will assemble to do him honour, we ask to bear in mind that, natural ability apart, this success is due to sheer hard work. These are no empty words, as our close and valued association with Mr. Makemson during the whole of this period has provided us with ample opportunities of knowing the "inside story."

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Recent History

In a message to the readers of the Bulletin of the Council of Iron Foundry Associations, Mr. Fitzherbert Wright says that: "A good deal of metal has flowed out of the cupolas since last year, nearly 3,000,000 tons of it, and I think it is a case for congratulation all round, that in spite of burdensome controls and raw material shortages, record outputs are being maintained by most ironfounders."

Yet we consider that if congratulations are to be handed out, the iron foundry industry should accord them to Mr. FitzHerbert Wright. For twenty-five years we urged the creation of such a body as the C.F.A., but our appeals fell on deaf ears, until during the war "Fitz," with dynamic energy, created an organisation the first job of which was to fight against the concentration of the ironfoundry industry. The success of the campaign is now just history. From that time onwards, under his leadership, the industry has acquired a "voice," which is respected alike in industrial as in Governmental circles.

Perhaps the speed at which he works, for the cause of co-operative effort, is thought to be too fast by some, yet he has created a comfortable feeling in the industry that units of the industry cannot have hardships imposed upon them without a fight being made for their amelioration. If we interpret his views correctly, they appear to be that the industry does not wish anything other than to be treated like any other business, and that the foundry industry is more important than the foundryman. If the former be taken care of the latter can look after himself. As readers of the Bulletin we thank the chairman for his inspiring message and heartily reciprocate his good wishes.

Mechanical Handling Exhibition

With the approval of the Government and the support of leading associations in the industry, a new exhibition—the First National Mechanical Handling Exhibition and Convention—is to be held at Olympia, London, from July 12 to 21, 1948.

The exhibition will show how mechanical handling can save labour and speed production, assembly, storage and transport in every type of industry and will demonstrate to the world's buyers the efficiency of British-made plant and equipment. The exhibits will include aerial ropeways, conveyors and elevators; coal, coke and ash-handling plant; cranes, gears and chains, hoists, stackers, pulley blocks and lifting gear; handtrucks, power-driven industrial trucks, runways, wagon-tippers, pneumatic handling plant and all types of accessories.

The following associations are supporting the exhibition:—Association of Crane Makers; Foundry Trades' Equipment and Supplies Association; Industrial Truck Manufacturers' Association, Limited; Materials Handling Export Group; Mechanical Handling Engineers' Association, and the Truck and Ladder Manufacturers' Association.

Correspondence

[We accept no responsibility for the statements made or the opinions expressed by our correspondents.]

CASTING BALLS ON IRON RODS

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—I am having to cast iron balls from 4 in. to 5 in. dia. on to 1¼-in. and 1½-in. round wrought-iron rods. The part of the wrought-iron rod which is in the cast-iron ball is well "jagged" and the rods are made hot before placing them in the moulds before pouring. They are made rather too hot to be carried by hand.

The difficulty I experience is that some of the cast balls are just slightly loose on the wrought-iron stem. They are not so loose that one can feel it by touch, and it is only by a blow on something solid that the fault can be detected. Another fault is that the cast-iron balls have blowholes under the skin.

Can any of your readers assist me with this difficulty, please?—Yours, etc.,

D. HUSS.

Whitechapel Bell Foundry,
32 and 34, Whitechapel Road,
London, E.1.
December 15, 1947

CONVERTER PRACTICE

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—The JOURNAL for July 24, 1947, was given to me recently and gave me much interest and satisfaction. The foundries hereabouts are mostly electric furnace, three-phase, arc-type, ranging from 1 ton to about 5 tons maximum; there is one converter in the Vancouver Engineering Works which was installed about 1912.

Could the Author (Mr. F. Cousans) of the physical data (page 278) on converter steel test-bars clarify the state of the bar at test, *i.e.*, as cast, or what form of heat-treatment, grain size, etc., has been given. The figures shown equal the best that I ever managed to get from electric steels even after considerable heat-treatment.

Could more information be given on spectroscopic control of the converter flame? I first read of this in "Spectroscopy" by Huggins, printed around 1880. Apparently Bessemer must have tried it!

What fundamentally causes cavities under risers in steel castings? I have eliminated this in small-scale tests on 40-lb. steel castings, but was not permitted to carry the application to shop or semi-scale production, although the solution was simple enough.—Yours, etc.,

ROBT. C. FAIRALL.

Apt. 4, 408, Dallas Road,
Victoria, B.C.
November 9, 1947.

[This letter has, on account of space limitations, had to be condensed.—EDITOR.]

A HIGH-SPEED PLANER built by Craven Bros. (Manchester), Limited, for the Vanderbijl Engineering Corporation, is thought to be the largest machine tool installed in the Union of South Africa.

The Scientist in the Foundry*

New Ideas for Foundry Investigations

By C. R. Tottle, B.Met.

Practical Applications for Scientific Facts

The use of supersonic waves, in which high-frequency impulses are transmitted through metals and reflected from flaws and the opposite face of the section, is already established in the inspection of castings and finished products. By means of connecting transmitting rods contacting the surface of a mould internally, it may be possible to study the transmission or reflection of supersonic waves by freezing metal, revealing the phases leading to porosity, for instance, though some difficulty would result from the fact that the contact must be very good for this method to work, and contacting rods would act as chills, upsetting the thermal conditions inside the mould.

Similar disadvantages arise in the application of electrical conductivity measurements, though here the contacts could be thin platinum wires. Base metal contacts would be unsuitable for all high melting point metals, due to oxide formation, but little platinum would be lost, and the measurements might thus reveal the progress of solidification and subsequent phase changes after solidification.

Such experiments as the above are only tentative, but the Author feels that they should be investigated, particularly those lending themselves to continuous recording, such as the electrical conductivity. The great advantage of these measurements, if successful, would lie in their adaptation to metal *as it is poured*, and during its settling in the mould prior to solidification, as well as to the actual freezing and subsequent cooling. Simple castings would be tackled initially, followed by more complex ones as the technique was developed.

Radioactive Isotopes

The future use of the products of atomic energy research holds probably the greatest unexplored field in metallurgy at the moment, as well as in other sciences. Radioactive isotopes can be produced of the metals involved in many commercial alloys, and their introduction into a melt as it is poured may hold a promising line of research. *Provided* that the activity of these isotopes is unaffected by the conditions of introduction into the molten metal, their subsequent movement in the casting would be simply detected. For those not conversant with these isotopes, it may be explained that they represent a form or forms of the element in which the nucleus of the atom varies in its proportion of charges, *i.e.*, protons and neutrons. The forms of each element occurring in nature are *generally* mixtures of all the isotopes, but by various transmutations peculiar to nuclear bombardments, the forms which are radioactive, *i.e.*, those which disintegrate spontaneously with the production of various radiations, can be prepared in small quantities.

When used as part of a charge in a commercial alloy, the normal metal would behave as usual, but the radioactive isotope would, it is postulated, commence to disintegrate, with the production of these radiations. The detection of the radiation by various instruments would be possible, particularly by the Geiger counter. This produces evidence of each single disintegrating atom, and records the numbers on a meter. The rate at which the atoms disintegrated would vary according to their distribution and properties, and hence their position could be traced in the casting. Imagine an alloy in which one element is prone to segregation, and that a small proportion of the radioactive form of this element were introduced into the runner basin during the pouring of the casting. Its movement through the mould could be easily detected, as explained above, and its final position ascertained. Movement of metal from a feeding head or riser could similarly be followed, by introducing such an isotope at the appropriate time, and studying its final position. By varying all possible factors: the flow of metal, the mechanics of segregation, and the distribution of non-metallic inclusions and gases could be studied at will.

Behaviour of Isotopes

It must be emphasised, that the chemical behaviour of isotopes is generally very nearly identical with the normal form of mixtures of all isotopes of the one element, that is why they are so difficult to separate as natural mixtures. For this reason, it is assumed that the radioactive form would behave in the same manner as the main addition of the element concerned, in so far as segregation, phase-changes and freezing are concerned. As mentioned earlier, it is not within the Author's scope to prophesy that the nature of liquid metals and alloys will not affect the behaviour of radioactive isotopes, but provided that their behaviour were normal, the method would be ideal and simple.

A Window in a Mould

From these somewhat hypothetical considerations, lest the Author be accused of having his head too far into the clouds some practical methods of attack which he has proved and used, will now be described. It occurred to the Author, some years ago, that the obvious way to study castings is in the mould itself. However valuable the methods of non-destructive testing on the finished casting, the interpretation of these results and their relation to the casting conditions is not easy. Mr. S. L. Fry[1] has described a really splendid way, that is the use of X-rays, to "see" through the mould. At about the same time, a

*Abridged from a Paper presented to the Newcastle-upon-Tyne Branch of the Institute of British Foundrymen.

The Scientist in the Foundry

practical foundryman suggested to the Author that the obvious requirement was a "window" in the side of the mould, and from this evolved the following technique:—

The "window" must be transparent, it must be refractory, and it must affect as little as possible, the thermal conditions inside the mould. Fused silica can be obtained in the transparent form, and satisfies, with certain reservations, the complete conditions. It is, moreover, of the same material as the preponderant constituent of moulding sands—another advantage.

Experimental Data

In the first trials, the Author arranged a flat plate of silica as one side of a cube mould, so that two sides and the bottom face of the mould were visible against the "window." The sand prepared was faced with a coal-dust mixture, in order to study the evolution of gas and the temperature distribution. Visible inspection of the mould, on pouring, was not easy, and the effects observed occurred so rapidly that a record could not be made. However, the method did show that gas evolution commences immediately the molten metal makes contact with a sand face, and, as the level of metal rises, the gas evolution decreases at the base, presumably due to the increase in pressure. The distribution of temperature was observed quite easily in the metal itself until the point at which a layer of solid metal was formed against the silica, whence no liquid could be observed further. (Fig. 1.)

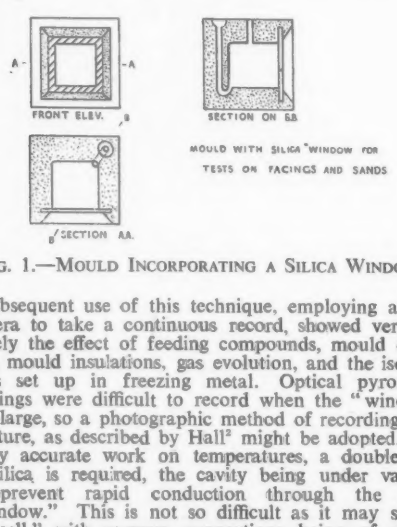

FIG. 1.—MOULD INCORPORATING A SILICA WINDOW.

Subsequent use of this technique, employing a ciné camera to take a continuous record, showed very definitely the effect of feeding compounds, mould dressings, mould insulations, gas evolution, and the isothermals set up in freezing metal. Optical pyrometer readings were difficult to record when the "window" was large, so a photographic method of recording temperature, as described by Hall[2] might be adopted. For really accurate work on temperatures, a double wall of silica is required, the cavity being under vacuum to prevent rapid conduction through the silica "window." This is not so difficult as it may sound, a "cell" with vacuum connections being of simple construction, the whole being moulded in place of sand at the required point. It is obvious that the cell or window must be greater in area than the mould wall it replaces, in order securely to lock the window in position to prevent movement. Further developments on these lines must be omitted in this Paper, but the Author hopes to publish some results from this method at an early date.

Local Alloying

One development of the above experiments was in the solving of another founding problem. It was desired to make a casting in grey cast iron, in which a certain collar round the body was to be wear-resisting and, therefore, preferably a white iron. The use of tellurium for this purpose was impossible, for, owing to the extremely thin section, trials with it always produced excessive chilling where it was not desired.† The use of chills also proved ineffective, because the hard face was adjacent to a thin section which required machining (Fig. 2). Experiments were therefore commenced with other hard facing alloy additions, painting

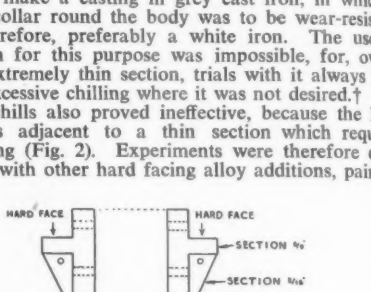
HARD FACE
HARD FACE
SECTION ½"
SECTION ⅛"
LONGITUDINAL SECTION OF GREY IRON CASTING WITH HARD FACES PRODUCED BY MOULD COATINGS

FIG. 2.—SECTIONAL VIEW OF CASTING REQUIRING HARD FACES.

the material on to a portion of the mould to produce white iron where required. Ferro-chrome was used initially, ground to pass 100 mesh, and suspended in cellulose acetate varnish. The mould was dried after painting, to evaporate completely the acetone solvent, and then poured with an iron giving the required properties in the main portion of the casting. The experiment was successful in producing a hard face in the required position, but the depth of chilling was uneven, and blowholes occurred on the face.

A series of moulds of simple shape were then made, with the silica window as described above. Various mixtures of ferro-alloys and suspensions in different vehicles were tried, and the depth of chill investigated by taking sections for examination under the microscope. Curves were drawn up showing the relation between depth of white iron produced and the mould paint used. Gas evolution and the solution of the ferro-alloys could be followed easily through the window and the correct treatment was developed for use on the actual casting itself. Practical trials on production moulds were then checked by means of the microscope and the method then went into full production on this and other moulds of similar type. Cellu-

†This is contrary to the findings of other investigators.—EDITOR.

lose acetate proved the most effective vehicle, and a mixture of ferro-chrome and ferro-manganese the best alloy combination. Incidentally, the method was later extended to produce austenitic facings with nickel and chromium, and actually to graphitise white iron castings on certain faces by the use of ferro-silicon, aluminium, and calcium silicide.

Stresses in Castings

Finally, the question of stresses set up in castings provides an excellent opportunity for study by scientific methods. The relaxation method, in which stresses are relieved by mechanical removal of metal, the relief being measured by the elongation or contraction between gauge points, is also well known on welds and castings.

Only the general distribution of casting stresses is obtained by these methods, but a study of their actual production in the mould would give a more detailed picture, and throw more light on methods for their removal or reduction to a minimum. For surface and overall stresses, the use of dilatometers contacting the casting surface could be tried, the connection between the casting and the mirror or gauge system being obtained by silica rods working in silica tubes, to minimise conduction and the masking of the true thermal conditions. Mirror dilatometers are the most accurate and simple in operation, and could be set up to reveal the changes in volume as length expansions or contractions over various positions in complex castings (Fig. 3). For internal

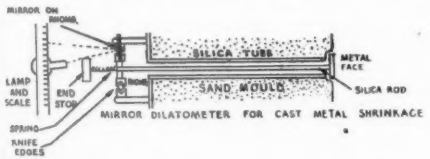

FIG. 3.—MIRROR DILATOMETER INSERTED IN MOULD WALL.

measurements, the Author suggests the use of thin metal bulbs, containing gas, and connected through the mould wall to a sensitive manometer. The three stages of shrinkage could be followed by such means, provided the metal bulb would stand the temperatures and pressures involved. Connection between bulb and manometer could be by silica tube, close to the surface of the casting, again to reduce conductivity along the tube. The solidification of the bulb inside the casting would mean a loss probably of precious metal, and would slightly alter the physical conditions, though a small bulb would minimise this (Fig. 4). Corrections would be required for temperature effects on the gas, and the contraction of the bulb.

The relief of internal stresses by heat-treatment requires further study on many commercial alloys, and must be prefaced by measurements on the values of stress obtained on various types and sizes of casting,

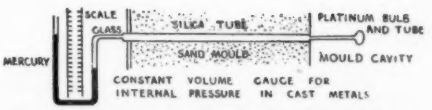

FIG. 4.—MANOMETER FOR MEASURING INTERNAL PRESSURE IN CASTINGS.

so that the treatment can be chosen in the light of the amount of stress to be removed.

The Author considers that many of the above suggestions should be proceeded with on an experimental basis, in order to assess their possibilities and develop any promising techniques. So much fundamental research is required in the field of cast metals, that any new approach, however revolutionary or fantastic in idea, must deserve a trial. The future of the founding industry will rest, to a considerable degree, on the activities of the scientist. The efforts and skill of the moulder, core-maker, and all foundry personnel will be required to adapt the discoveries to production, and co-operation between research organisations and commercial foundries should be extended and improved.

The Author would like to express a hope that this Paper has given some indication of the work of the scientist on cast metals, and that interest in the possibilities may be stimulated by it. The Department of Metallurgy in the University of Durham is hoping to develop many sides of metallurgical research in the near future, but one of the most important is in this field of cast metals. The future of the founding industry is vital to the whole country as never before, and the staff at the University are keeping that in their minds constantly. They trust that the foundrymen will keep them on the right track, but be ready to take up any suggestions they may put forward which show promise.

REFERENCES

[1]S. L. Fry. "Preliminary Investigation of Metal Pouring by Ciné Radiography." Proceedings, I.B.F., 1944-1945.
[2]J. A. Hall. "A Photographic Investigation of the Brightness Temperature of Liquid Steel Streams." Journal, Iron and Steel Institute, January, 1947.

Heat-resisting Alloys

The Sir John Cass Technical Institute, Jewry Street, Aldgate, E.C.3, has organised a series of six lectures on "Modern Applications of High-temperature Alloys." They are to be given by Mr. C. G. Conway, B.Sc., on Thursday evenings at 6.15 p.m., starting on January 22. The fee for the complete course is 10s. The syllabus is one that commends itself as being comprehensive.

The British Steel Founders' Association

The British Steel Founders' Association held its Annual General Meeting in London on December 2, at which Mr. F. A. Martin was elected Chairman for the ensuing year, and Mr. F. W. Rowe Vice-Chairman. Peat, Marwick, Mitchell & Company were re-elected Secretaries to the Association.

Youth in the Foundry

By Arthur Sutcliffe

As still a "youth in the foundry,"* I propose to outline, from my own experience, the advantage of technical study by the foundry apprentice. The trade to-day offers everything in the way of success to the ambitious lad on leaving school. The foundry undoubtedly has the great appeal of science, and is consequently full of interest to the intelligent youth.

A visit to most foundries does not give the impression of a congenial place in which to work. To the writer, looking back to his first visit as a boy, and since then learning a little of the technical side of the trade, the foundry appears as a good book in an old cover. The appearance is uninteresting, but beneath the surface lies knowledge, education and, finally, success for its students.

Practical Work First

Although the lad on entering the foundry to-day does not receive so much personal instruction as those of earlier generations, he is compensated by the fact that this omission develops his initiative, by forcing him to use his own discretion. Whilst there are many problems that must be taught, there are also many which by observation and forethought can be solved by a keen lad. During the first year, a course of core-making is usually undertaken, and every advantage should be taken of the instruction given, as that remains which is well learned early. It is worth remembering, too, that in the production of clean and sound castings it is equally important that both the cores and the moulds be well made.

Engineering is an industry that demands attention to detail; and this is as important in the foundry as in other departments. If the learner is given an intricate pattern and core-boxes, to carry out the core-making and moulding operations throughout proves both interesting and helpful. Before starting any job the pattern and core-boxes should be examined. This gives an idea as to their method of assembly and how to make allowances for the bringing off of air and gases at the most convenient points. Runners and feeders, too, must be decided upon before the pattern is put into the sand.

It is most encouraging for a lad to work in this way, especially when he sees, as a result, a clean and sound casting in the fettling shop; for it gives him a feeling that he has done almost everything in the production of the particular casting. Rejected castings are everyone's lot, and these must be turned to good purpose by finding the defects and their causes and so preventing recurrence.

Technical School is Essential

After a year or so the youth should have reached the stage when technical school attendance is essential. Classes are held in the majority of industrial centres, although within the Author's experience many are discontinued through poor attendance; which again emphasises the scope there is for the studious. By attending these classes a greater interest is created in the daily work, for if a lesson is on the various constituents of iron, and how they affect the properties, the student will henceforth examine scrap and raw materials with more interest and knowledge. A course of lectures on metallurgy is necessary, for it is just as important that the foundryman should know the rudiments of this interesting science, as it is for the metallurgist to know of foundry work.

The men who will be able to fill the higher posts in the future are those who have acquired a combined practical and theoretical training. The young man possessing these qualifications is assured of success, for it is agreed that there is a shortage of skilled men, and an equal shortage of men qualified to fill important managerial posts.

In conclusion, the Author hopes that he has encouraged those already in the foundry, and that he may have influenced those seeking for themselves, or for others, a trade with a future for a keen lad.

*Mr. Sutcliffe is now 72 years old.—EDITOR.

The Necessity for Venting

By "Coroner"

Waster castings are caused through a variety of reasons and occasionally a wrong diagnosis of the trouble is made. Often this occurs on the most simple of castings and many reasons are advanced for the cause of the defect, while all the time it might only be the overlooking of a very elementary factor which caused the trouble.

For example, a quantity of small angle-plates had been made, and, on machining, a number of these were found to be defective in the angle. At first, the grade of metal used was held to be responsible for this defect, but ultimately it was traced down to the method of moulding adopted. This consisted in moulding the job in a bottom box with a plain top, and running on the top by means of a cut-in runner to the plate portion. A consideration of the direction of solidification of this casting gave the clue to the defect. All the metal in the mould passed over the sand which formed the portion of the mould making the angle and thus heated it up considerably. Imaginary isothermal lines drawn on a sectional layout of this casting revealed that this heat was not being easily conducted away by the sand, as heat was being dissipated from the vertical wall as well as the horizontal plate, and so a hot spot at the junction of the two plates was created, resulting in a drawn casting which was revealed as a spongy place on subsequent machining.

Altering the position of the runner improved matters somewhat, but a complete cure was only effected when the heat at this angle was more rapidly dissipated. This was, in this case, effected by means of vents from the angle to the outside of the mould and after this method was adopted wasters with this defect were non-existent.

Foundry Conditions, Personnel and Production

A Practical implementation of the Garrett Report

By R. F. Coates

Summary

This Paper discusses the urgent need for improving the standard of working conditions in foundries. It emphasises the fact that good standards in physical and mental environment are production factors of equal import to the foundry industry, as are those of the technical control of its processes. The position of the foundry industry's labour force and its implications are reviewed to emphasise the importance of good working conditions in relation thereto.

Illustrations are given of some initial measures which have effected improvements in working conditions, together with suggestions concerning others, which may be applied to the same end.

Since the human factor is industry's greatest natural resource, the Author considers that, through the establishing and maintaining of good working conditions, there exists possibilities, not only of increasing production, but also of raising the status of the foundry industry and its workers to a level commensurate with their contribution to the industrial and civil life of the nation.

The text is based upon experiences and observations within the engineering jobbing section of the foundry industry, much of which in principle may be more widely applied.

Introduction

Two principal factors underlie the general awakening to the need for improving foundry working conditions. They are, social progress and the man-power shortage. The setting up of the Garrett Committee indicated the Government's concern in the matter. At the time of writing these observations the report of this body is not available.* It will no doubt indicate standards to which all foundries will be expected to conform. Within the industry, conditions and related problems have been the subject of frequent discussion, and a number of foundry concerns have introduced measures to improve them.

The industry's associated bodies have also given much consideration to the problem, from which information of extreme value has become available to their respective members. Among these are the Council of Ironfoundry Associations, the International Meehanite Research Institute and the Institute of British Foundrymen. The service bulletins of the former frequently contain information covering all matters relating to industrial welfare. Within the Meehanite group, factual reports concerning all aspects of improving conditions and amenities are periodically circulated. The principal contribution made by this Institute has been shown by the practical lead taken by Mr. D. Howard Wood, a recent past-president, in providing a fund for inducing suggestions from members covering the subject of improving foundry conditions and amenities.

There is, therefore, every indication that in becoming "condition conscious," the foundry industry is adjusting its ideas and outlook to meet the needs of the industry in its own, and the national, interest through consideration of the human factor. The immediate need, however, is that such thought and vision be translated into practical reality.

Industry is actuated by two prime motives, namely, to make a profit and self-perpetuation. This Paper endeavours to show that good standards in physical and mental environments are conducive to the satisfying of those motives.

The consideration of physical conditions covers good housekeeping, colour, dust control, ventilation, heating

*This Report, published in August, 1947, under the title "Report of the Joint Advisory Committee on Conditions in Ironfoundries," became available soon after this Paper was completed. The observations and recommendations made in this comprehensive and informative document, provide a basis upon which foundry managements may set a standard to improve foundry conditions, in so far as they apply to domestic needs and circumstances. The signatories of this Report, comprising eminent representatives of both sides of the Foundry Industry, and representatives of H.M. Inspectorate of Factories, are a sufficient recommendation of its value.

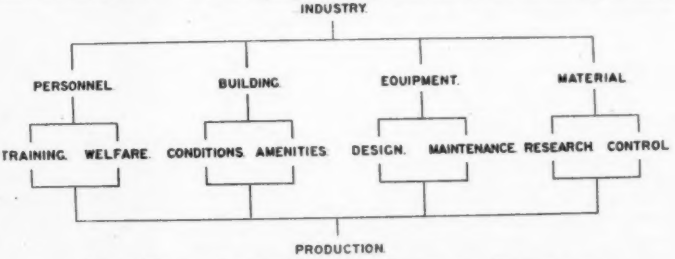

CHART NO. 1.—CO-ORDINATION OF EFFORT FOR PRODUCTION.

Foundry Conditions

FIG. 1.—CUPOLA CHARGING PLATFORM.

and lighting. Other related subjects discussed are washing facilities, safety and medical supervision. While good standards in the above assist the worker both physically and mentally in the performance of his task, a corresponding standard in works relations is complementary, and therefore receives consideration.

Technical considerations are not within the scope of this Paper, since they are matters which only the specialist can adequately cover.

The Author is convinced that improved working conditions in foundries are factors conducive to increasing production; furthermore, that they carry a social value which no progressive industry can ignore.

The aim of this Paper is to stimulate interest in this problem which faces every foundry concern, and it represents an endeavour to enlist a response among all levels in the industry, to the challenge which it undoubtedly offers.

Production Factors

Industry may be defined as the organisation of production for profit. Production is effected through the co-ordination of the human, and physical factors shown in the Chart No. 1. Efficient industrial organisation involves the maintaining of good standards within each of the spheres shown, in order that each may fully contribute to the common end of production. The comparing of the present standards in technical control, research, and design of equipment, with the rule of thumb methods in operation at the beginning of the century, gives ample evidence of the great advances the foundry industry has made in these spheres.

It cannot be said, however, that a corresponding advance has been made in those matters which are more closely related to the human factor. This being so, it is reasonable to conclude that in such matters covered by the term industrial welfare, there exists much scope within the industry for profitable development. It is of some interest to note that the National Institute of Industrial Psychology report that its investigation work has induced a new outlook on the part of management, a realisation of human values, and the great economies and increases in productivity to be derived from the consideration of the worker.[1] Following a study of factual works on industrial psychology, the Author considers that if the same sympathy and support is given to this science, as that given to mechanical and technical development, vast new fields of productivity will be opened up.

Labour

A revolution has already taken place in the supply of labour. For a long period an abundant supply existed, while now industry generally is faced with a shortage of man-power. In the basic industries, the position is worsened by the fact that the conditions associated with them, have in recent years induced a larger proportion of school leavers, who in many cases are influenced by their parents; to seek the outwardly more attractive occupations.

Another factor which the Author has noted is, that the foundry worker has not been a good publicity agent for his craft. The position of the foundry labour force carries significant implications to both employers and employees. To the former, it means that labour has assumed the position of a vital commodity. Consequently it signifies to the latter that the days of mass unemployment are, at least for a considerable period, over.

These facts call for an adjustment of outlook on the part of both sides, to accommodate this position, in co-ordinating their efforts, in order that the adverse effects of the man power shortage may be minimised. Management on the one side should do all possible to encourage the human element to give of its best, through the establishing of high standards in all aspects of industrial welfare. On the other side, it is

FIG. 2.—CORE SHOP.

incumbent upon the worker, to take full advantage of such innovations, and to become as one force with management in order to achieve the common end of a maximum of production.

Since the most serious shortage of foundry labour exists in the highly skilled category, the work of those bodies which have prepared schemes of recruiting and training, should be fully utilised. Such schemes, however, will be lacking a fundamental factor, while the low standard of foundry working conditions remains.

At the present time the school leaver has a wide choice of occupations. Among the considerations which both he and his parents apply is not only the wage packet, but also the conditions under which it is earned. The influence of the latter consideration is most likely to become greater, as a result of the fully implemented Education Act of 1944.

On the basis of improved conditions, the work of recruiting will become simplified. This, together with sound systems of training, will do much in encouraging a high percentage to remain in the industry, minimising labour turnover, the cost of which, while hidden, is none the less appreciable.

In a Presidential Address,[2] the case of a foundry concern was cited which had set up an excellent scheme of general welfare, which at that time had a waiting list of over 20. Summed up, the foundry industry's labour problem calls for the establishing, and maintaining, of such schemes which are conducive to obtaining the highest productivity from existing personnel, and provide for adequate recruiting and training. In a report[3] it is stated that any scheme which has possibilities must be tried to attract labour. The Author is of the opinion that any scheme of improving working conditions is fundamental to the process of achieving that end.

FIG. 3.—VIEW OF FOUNDRY, SHOWING SHELVES AND VACUUM CLEANER.

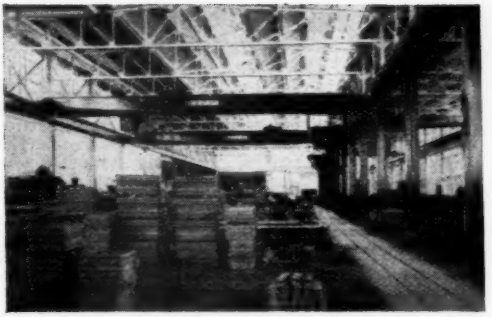

FIG. 4.—CONCRETE GANGWAY THROUGH THE FOUNDRY.

Works Relations and Teamwork

One of the most promising features of the present industrial situation is the realisation of the importance of good works' relations. Fundamental to their existence is leadership, which sets the example. It calls for the cultivating of a mental attitude and outlook, which tempers relations with a degree of sympathy, and understanding of human nature. This attitude is essential for the maintaining of harmony and goodwill.

The worker must be convinced that he is an essential part of industry, needed for the physical and mental contribution he can make. The new entrant must be made to feel that he is being engaged for those very purposes. It is, of course, quite hopeless for any one individual to assume full responsibility for all personal matters relating to the human element. The co-operation of supervision is, therefore, of vital importance.

Orders and instructions must be given by those in authority, but the ways in which they are interpreted are significant factors in maintaining good relations. A policy regarding any function, be it mechanical or human, must first be understood by all concerned if it is to succeed. The medium through which management can best define its policy is that of joint consultation. It permits a free and unlimited expression of contending points of view.

It calls for new habits of thinking, and acting, on the part of all concerned, which, if applied, develops the character of the organisation and those engaged within it. At the works with which the Author is connected the Works Industrial Council has periodically met since its formation in 1928. It occupies a position in the organisation comparable to the House of Commons in British national life. It aims to maintain, and strengthen, the good relations existing between the management and the workers; to provide, furthermore, a means for the interchange of opinion between the groups, in order to obtain maximum production by the most efficient and economical methods.

Representatives from all sections of the works and offices are periodically elected. Members of the

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management and supervision are ex-officio members, and the meetings are presided over by the chairman of the company. Prior to each meeting, the agenda is posted in all sections, and the printed minutes are circulated for perusal by every member of the organisation. The policy of the management on all matters relating to the employees is clearly defined, and open to discussion, before any measure is put into operation.

The value of joint consultation lies in the better quality of the solutions, even though they may be more difficult to attain. Joint consultation, however, must not be merely a matter of meetings. It must be approached and built upon mutual trust and respect, and must express an attitude of mind, whereby the respective interest can reach a point of agreement from working in co-operation. The spirit of co-operation, moreover, must not be left in the committee room.

Systems of incentive payment form an important issue in employer-employee relations. From time to time this matter is cussed, and discussed, by all from the operative to the highest executive. Upon those responsible for such work, there rests a particular charge in maintaining good relations. It is best achieved through prompt attention in a courteous manner, with applied commonsense, which invariably leads to a satisfactory conclusion to most grievances.

Good standards in works relations cannot be bought either with money or by the provision of the best working conditions and amenities. They can, however, be established, and maintained, with integrity, tolerance, and vision, and must be built on the sound foundation of leadership by example.

In an atmosphere of good relations exist the elements conducive to fostering the team spirit. All sections of the British community can with pride look back upon that which was achieved in such a spirit during the war. From the memorable days of Dunkirk, all sections of industry demonstrated their ingenuity and ability to equip the armed forces to achieve final victory in a spirit of co-operation.

The present industrial situation is such that it calls not only for the recapturing of such a spirit, but also that it should become a permanent and powerful force within every industrial group. The workers in a foundry may be likened to a football team, where success or otherwise is dependent upon the degree of collaboration or friction existing. By itself, the team may achieve a degree of success. But if the team has behind it effective leadership, setting high standards in such factors conducive to obtaining the best from the team, then either on the field, or in the workshop, maximum results will be achieved.

Good Housekeeping

This domestic term, when applied to foundries, means the attaining of some semblance of orderliness. It is but stating the obvious that order within any sphere of production is conducive to efficiency, and that disorder tends to induce inefficiency. While the possession of an " orderly mind " is to some extent an innate characteristic, it is, none the less, a trait which may be cultivated, especially amidst a good environment. Physical surroundings influence to a considerable degree the desire and need for tidiness. While it is difficult to compare the environment of a drawing room with that of a foundry, the standard in each case can be such as is conducive to obtaining the best, either from leisure or work.

Foundrymen have much to learn from the housewife concerning the principles of good housekeeping. All are familiar with the annual spring clean. The inconveniences shared by the family during the operation are amply repaid on its completion, and with it comes the urge to keep the home tidy and clean. Furthermore, the systematic housewife gives frequent attention to each room in turn during the succeeding months, thereby maintaining a good standard of cleanliness and appearance. If this procedure be followed in foundries, it will do much to maintain good conditions, with its attending benefits to the human element and production.

From the appearance of some foundries, the task of beginning a programme of housekeeping and cleaning may appear to be a waste of time and effort. The beginning is probably the greatest difficulty. If the problem is faced with determination and energy and with the belief that good housekeeping is not a luxury, but a requisite of good foundry practice, this initial difficulty will be largely overcome. Co-operation on all sides is, of course, essential to success in a programme of good housekeeping.

First, management must set the standard; supervision must follow by enlisting the co-operation of the workers to maintain the standard. This may require patience, persistence and perseverance until the workers are convinced that tidiness is the right way—and safe way—to work. The first move in a shop where there has been little attention to housekeeping is not necessarily the installation of new equipment. The start should be to get some semblance of order, by clearing the working floor of unnecessary materials and equipment. This will provide more usable and safer working space. The removal of dust from the walls, preferably by the vacuum cleaner, should be done at standardised times. All departments should, of course, receive attention.

Fig. 1 shows a cupola platform giving adequate light and fresh air. The absence of junk so often found on charging floors minimises accidents, besides contributing to efficient working. The effect of paint, light and order is excellently illustrated in the core shop shown in Fig. 2.

A pattern rack, besides contributing to good housekeeping, facilitates the handling of these cumbersome pattern boards, which are in frequent use on the turnover machine. Boards leaning one against the other may result in difficulty in extracting and occasional damage to the patterns. Fig. 3 shows one of a number of steel shelves which have proved of value for small patterns, tool boxes, etc., which contribute to tidiness in keeping such articles off the foundry floor.

One of the major factors contributing to untidiness in jobbing foundries is the practice of leaving such items as cramps, gaggers, nuts and bolts, etc., strewn on the floor. Such items in continual use should be accommodated in bins or upon racks, and those in occasional use should be removed and stored. The cost of storing is more than offset by the time saved in searching for such articles when required, in addition to prolonging their life, saving floor space, and eliminating the danger of falls.

Another notable contributor to untidy floor space is the disposal of unused metal. Where no facilities for this are provided, a hole or a few channels are dug in the foundry floor. Should the amount be unexpectedly large, a general confusion in the process of disposal often ensues. This makes for extremely bad working conditions, and particularly in warm weather is heavy on labour. The most efficient method of metal disposal is by the use of pig moulds. By this means, dust is reduced, floor space and labour are saved, and the pigs produced are in a clean condition and are more easily handled.

Good pathways are of particular importance. They contribute to general appearances, are conducive to safety and carry a production value. The jobbing foundry is limited in its choice of materials for flooring or pathways to either sand or concrete, since the asphalt or pitch-base materials soften under heat. Where space and nature of the work permits, a wide concrete main pathway, as shown in Fig. 4, facilitates transport through the use of bogies and runabouts.

(To be continued.)

REFERENCES

[1]Lawe, F. W. "Industrial Psychology." Thornton and Butterworth, London. Page 224.
[2]Wood, D. Howard. "Casting Reflections." Presidential Address, Proceedings. Institute of British Foundrymen, Vol. XXXIX. Page A.18.
[3]Report of the Iron Industry. Presented by the Joint Iron Council to the Ministry of Supply and Aircraft Production, 1946. Page 27.

Power Cuts Dangerous in Iron Foundries

That serious damage was likely to be caused by unexpected power cuts in industry, particularly in iron foundries, was contended by Mr. J. S. B. Underwood, of Messrs. De La Rue, Limited, at a recent meeting of the Oakengates Chamber of Commerce.

He said industrialists had agreed to a "power-less" day to prevent cuts and had honoured that agreement, although it had not been honoured by the electricity supply authorities. The previous week they had to suffer two power cuts, which had proved expensive in loss of output. It was also a particularly dangerous procedure, especially where men were dealing with molten metal. He urged that strong protests be made to the West Midland Joint Electricity Authority, the local M.P., and H.M. Inspector of Factories.

It was decided to make a strong protest as suggested, and also to communicate with other trade organisations on the matter.

Notes from the Branches

London Branch

Though attendance was obviously influenced by the demise of the basic petrol ration, about 150 members and guests turned up for the first post-war social function. This took the form of a supper dance and cabaret, and was held on the fourth floor of the Café Royal in Regent Street. Parties were grouped at tables around the dance floor and the whole scene recaptured something of the pre-war glamour of the West End of London. Owing to its being a mid-week affair—it was held on Wednesday, December 17—there were but few members present from the provinces. The Institute, in the unfortunate absence of Mr. P. H. Wilson, O.B.E., through illness, was represented by the secretary, Mr. T. Makemson, M.B.E., and the vice-president, Mr. R. B. Templeton. The Branch-President, Mr. E. M. Currie, made a short speech of welcome, to which both Mr. Templeton and Mr. Makemson responded. The evening's entertainment was organised by Mr. F. Arnold Wilson and Mr. Barrington Hooper, C.B.E., and to them the thanks of everybody were due for a particularly enjoyable time.

Bradford Firm's Training Scheme

An ambitious apprentice training scheme has been inaugurated by Crofts (Engineers), Limited, power transmission engineers, of Thornbury, Bradford. In order to enable boys to qualify as craftsmen in the engineering industry a training school has been opened at the works, which is equipped with modern tools and staffed by qualified instructors. The course will begin on January 5, and boys up to the age of 16 who wish to register should write for particulars to the personnel manager. Standard rates of pay with bonus will be made to all employees enrolling under this scheme, and at the end of the course a certificate of proficiency will be given. Canteen facilities and the Croft Social and Recreation Club cater for the general interests of the boys.

Foundry Statistics

The November Monthly Bulletin issued by the British Iron and Steel Federation reports that the personnel of the ironfoundry industry rose in September from 136,534 to 136,701. The weekly average production of steel castings rose in October to 7,700 tons, which is 200 tons better than the September production. The deliveries were almost unchanged at an average figure of 3,900 tons, but there was an increase in the production of alloy steel castings.

The Ministry of Labour and National Service reports that in October there was an increase of 1,600 in general ironfounding employment, but unofficially it is learnt that this figure should be not 1,600 but 4,000.

Obituary

MR. T. H. GALBRAITH, works controller of the Radiation group of companies, died recently.

MR. FRANCIS ROBIN WIX, a director of the Phosphor Bronze Company, Limited, Birmingham, died recently at the age of 64.

MR. JAMES WILLIAM WILSON, formerly of Evered & Company, Limited, brassfounders, etc., of Smethwick, died on December 11 at the age of 46.

MR. JOHN GEORGE, manager of the heavy-duty cooking-apparatus department of the Carron Company, Falkirk, has died at the age of 72. He had been ill for some months.

MR. DUNCAN M'KENZIE, who has died at the age of 91, was formerly associated for more than 60 years with the Singer Manufacturing Company, Limited, sewing-machine manufacturers, of Clydebank.

MR. FREDERICK GEORGE LAMBERT, who died on December 11 following an operation, had been connected with Cakebread, Robey & Company, Limited, manufacturers of drain and tube clearing machines, of Wood Green, London, N.22, for more than 55 years. He was 70.

SIR WILLIAM JOHN TALBOT, who died on December 12 at the age of 75, was chairman of the Talbot-Stead Tube Company, Limited, Walsall, which he founded in 1906. Sir William had been awarded a Whitworth Exhibition, and also had been president of the Walsall Chamber of Commerce.

MR. HUBERT RICHARD GATENSBURY, founder and head of Gosling & Gatensbury, Limited, potters' engineers and ironfounders, of Stoke-on-Trent, died on December 10. Mr. Gatensbury, who was 75, founded the company 53 years ago in partnership with Mr. James Gosling and, since Mr. Gosling's retirement in 1927, had conducted the business himself with the assistance of his three sons.

MR. BENJAMIN TALBOT died on December 17. He was chairman and managing director of the Cargo Fleet Iron Company, Limited, and the South Durham Steel & Iron Company, Limited, and was interested in many other important industrial undertakings on the North-East Coast. Born in 1864 and educated at Fulneck School, near Leeds, he was the inventor of the continuous process of steel manufacture which bears his name, also of a mechanical gas-producer and of the Talbot hydrocarbon lining. He was awarded the Elliott Cressen Gold Medal and John Scott Medal of the Franklin Institute of Philadelphia, and in 1908 received the Bessemer Medal of the Iron and Steel Institute. He was president of the Iron and Steel Institute and of the National Federation of Iron and Steel Manufacturers in 1928. During the war of 1914-18 he acted in an expert advisory capacity to the Ministry of Munitions, and also as a member of the Departmental Committee of the Board of Trade (1917) to consider the position of the iron and steel trades after the war.

Dorman, Long's Activities

For the benefit of their employees, Dorman, Long & Company, Limited, have issued a handsomely illustrated survey of the wide ramifications of the company's industrial activities and the manner in which they are contributing to the vital task of national reconstruction. "This information," writes the chairman, Lord Greenwood, in a foreword to the booklet, "will be of interest and value to the three chief partners in our organisation—the owners, the employees and the customers. These three partners form a unity of interest which must never be forgotten. The owners provide the capital without which modern industry cannot progress; the staff and employees supply the motive power of production, administrative ability, technical skill and man-power, while the requirements of our customers afford to D.L. products the substantial markets essential for the large-scale operations of the company."

It is revealed that the shareholdings in the company number 36,000, the employees 27,000, while the wage bill is £9,300,000 per annum.

Price of Tin Increased

Licensing Restrictions Withdrawn

The price of tin metal of minimum 99 per cent., up to under 99.75 per cent. tin content, was increased from £437 to £510 per ton (f.o.b. U.K. port or delivered U.K. consumers' works), as from December 17.

Other grades are varied as follows:—Refined tin, 99.75 per cent. minimum, from £438 10s. to £513 10s.; refined tin, 99.9 per cent. minimum, in 28-lb. ingots, from £443 to £518; grain bar tin, from £457 to £530; granulated tin, from £462 to £535. The customary extras for small lots, packing, etc., will apply.

The restrictions on the granting of licences to United Kingdom consumers which have been in force for November and the first half of December are now withdrawn, and applications for such licences will, until further notice, be granted in full at the new prices now announced.

Maximum German Steel Output

The Council of Foreign Ministers have agreed that the figure of maximum annual production of steel in Germany shall be raised to 11,500,000 tons, which was the figure proposed by Mr. Bevin in the British statement of supplementary principles to be observed in making the treaty with Germany. After a relatively short discussion it was adopted unanimously by the Council in preference to the French suggestion of 7,500,000 tons and the Soviet suggestion of 10-12 million tons.

The previous figures agreed by the Allied Control Council in March, 1946, allowed a total capacity of 7,500,000 tons, with production in any one year limited to 5,800,000 tons.

Steel Supplies and Exports

Engineering Targets to be Discussed

The Minister of Supply, Mr. G. R. Strauss, speaking at a luncheon given by the British Engineers' Association in London recently, said that even after allowing for savings in capital investment the 1948 steel output target of 14,000,000 tons would not be enough to meet urgent essential home demands as well as export requirements. The steel industry was doing a fine job of work and the indications were that, given the coke, coal, scrap, other materials and the transport it required, it would be able to achieve the difficult target next year. The Minister intimated that discussions would start soon between the Government and the engineering industry on adjustments in export targets which might have to be made because available steel supplies would be insufficient to meet programmes in full.

As it was inevitable that the total volume of engineering exports would be less than we would all have liked to see, it was all the more important that as high a proportion as possible should go into markets that would bring us an immediate return in much needed food and raw materials. Mr. Strauss said that we might have to expedite deliveries of certain scarce capital goods, such as locomotives and wagons.

Adaption to Peacetime Needs

The engineering industry was now exporting immensely more than before the war. In 1938, the value of the exports from the machinery, electrical goods and vehicle industries was £9.4 million a month. As soon as the war was over these industries adapted themselves with remarkable energy to peacetime needs. In 1945 the exports of these same goods were at the rate of £6.2 million a month, but in the last quarter of 1946 they increased to £30 million a month—166 per cent. by volume of 1938. In the third quarter of this year the average monthly figure was £37 million, and in October £39 million. The latter was equal to £35 million at 1946 prices.

Sir Stafford Cripps, Chancellor of the Exchequer, announced in a written reply in the House of Commons last week that, in spite of the cuts in the investment programme, steel supplies for the first half of next year were likely to be insufficient to meet in full some home and export programmes. There would, therefore, have to be a revision of some production programmes and export targets in the steel-consuming industries. Revised targets would be worked out as soon as possible in consultation with the industries affected.

THE CAPITAL OF Robert Cort & Son, Limited, engineers, of Reading, has been increased by £90,000 in 48,000 5 per cent. irredeemable cumulative preference and 42,000 ordinary shares of £1 beyond the registered capital of £10,000.

TO MAINTAIN the recent high level of steel production, Christmas holidays will be sacrificed by the men employed in the steel melting shops on Tees-side, and many of the rolling mills will also be operated throughout the holiday period.

Mr. Tom Makemson

21 Years as Secretary of I.B.F.

Mr. Tom Makemson has completed 21 years as secretary of the Institute of British Foundrymen. His association with the Institute covers an even longer period, for he was elected to membership in 1917, while in 1923 he became hon. secretary of the Lancashire branch. Mr. Makemson was trained as a patternmaker at Workington and was subsequently employed at the British Westinghouse Company (now Metropolitan-Vickers Electrical Company, Limited), Manchester, first as a patternmaker, later in charge of foundry and patternshop apprentice training, and finally in the research department. After studying mechanical engineering for some time at the Manchester College of Technology, he took the course in metallurgy and was awarded the Associateship of the College. In 1926, when the International Committee of Foundry Technical Associations was formed, Mr. Makemson was appointed secretary, a position he still holds. He is also secretary of the International Committee on Testing Cast Iron, and since 1927 has been secretary of the Manchester Association of Engineers.

Mr. Makemson was seconded to the Iron and Steel Control in May, 1940, becoming successively Deputy Director, Joint Director, and afterwards Director for Iron Castings. He relinquished this post in July, 1946. He was awarded the M.B.E. in January of the same year. For many years he has been a member of the Council of the British Cast Iron Research Association, while he has been identified with numerous other committees connected with the foundry industry. He has been particularly active in matters connected with apprenticeship, training and education. He is secretary of the Advisory Committee on Examinations in Foundry Practice and Patternmaking in the City and Guilds of London Institute, and for a few years was joint examiner in these subjects. Mr. Makemson has attended foundry conferences in many European countries and on two occasions in the United States.

British Yards to Build 29 Tankers

Contracts have been signed for the building of 29 tankers aggregating 338,400 tons deadweight for the British Tanker Company, Limited, at an estimated cost of £15,000,000. Seventeen of the vessels are to be constructed on the North-East Coast. Swan, Hunter & Wigham Richardson, Limited, Wallsend, are to construct four of the ships, R. & W. Hawthorn, Leslie & Company, Limited, Newcastle-upon-Tyne, one, William Doxford & Sons, Limited, Sunderland, four, Sir James Laing & Sons, Limited, Sunderland, two, Joseph L. Thompson & Sons, Limited, Sunderland, three, the Furness Shipbuilding Company, Limited, Haverton Hill-on-Tees, two, Smith's Dock Company, Limited, North Shields, one. Harland & Wolff, Limited, are to construct six—three at Govan and three at Queen's Island; Lithgows, Limited, Port Glasgow, will be responsible for three, the Blythswood Shipbuilding Company, Limited, Scotstoun, for one, and Cammell Laird & Company, Limited, Birkenhead, for two.

World Production of Iron and Steel

Six Months' Figures

Figures relating to iron and steel production in the different countries have been compiled by the Statistical Office of the United Nations. The appended tables, extracted from their statistical bulletin, state monthly averages reached in 1938, together with monthly output figures for the first half of this year, in thousands of metric tons, Table I referring to pig-iron and ferro-alloys, and Table II to steel ingots and castings.

No figures are given with regard to Brazil, Italy, Russia, and Spain, and records are incomplete in the cases of India and South Africa. It should be noted that German production figures include the British and American zones only.

TABLE I.—*World Production of Pig-iron and Ferro-alloys in the First Half of* 1947.
(*Thousands of Metric Tons.*)

Countries.	Monthly average, 1938.	1947.					
		January.	Feb.	March.	April.	May.	June.
Australia	79	97	108	76	95	98	98
Austria	32.4*	11.7	0.7	0.5	12.1	16.1	19.2
Belgium	202	223	201	223	225	229	228
Canada	64	170	145	162	158	159	160
Czechoslovakia	110	113	103	122	116	124	123
France	501	402	360	408	416	428	386
Germany†	1,017‡	154	134	171	175	166	155
Hungary	27.9	15.5	17.8	22.7	25.8	28.3	27.7
India	131	132	137	138	131	—	—
Japan	214	18	17	21	28	31	33
Luxemburg	129	105	113	125	132	141	158
Poland	74	55	53	64	68	73	71
South Africa	24.5	54.2	47.2	54.9	51.9	56.3	51.9
Sweden (*a*)	56.7	72.6	62.9	60.3	65.2	71.8	59.7
United Kingdom (*b*) ..	572	762	512	500	706	577	585
U.S.A. (*c*)	1,589	4,615	4,128	4,647	4,381	4,609	4,363

* Relates to 1937. † British and American zones only. Figures for other zones not available.
‡ Relates to 1936. (*a*) Excl. ferro-alloys. (*b*) Incl. blast-furnace ferro-alloys only.
(*c*) Excl. ferro-alloys made in electric furnaces.

TABLE II.—*World Production of Steel Ingots and Castings in the First Half of* 1947.
(*Thousands of Metric Tons.*)

Countries.	Monthy average 1938.	1947.					
		January.	Feb.	March.	April.	May.	June.
Australia	98	102	106	82	93	98	104
Austria	54.2*	13.2	13.7	20.6	31.2	29.2	28.6
Belgium	190	231	206	229	234	228	232
Brazil	7.7	—	—	—	—	—	—
Canada	98	227	208	245	220	221	216
Czechoslovakia	153	192	172	205	197	189	186
France	518	486	449	498	508	505	465
Germany†	—	178	187	243	244	251	239
Hungary	54	33.9	40.6	47.9	44.6	50	50.3
India	82	112	97	103	105	—	—
Japan	539	51	55	60	71	76	86
Luxemburg	120	97	106	118	127	133	147
Mexico	6.1	19.2	19	33.2	26.4	—	—
Poland	120	110	95	121	126	159	127
South Africa	25	47	47	54	47	—	—
Spain	47.8	—	—	—	—	—	—
Sweden	83	113	97	101	101	111	94
United Kingdom	881	1,219	837	797	1,199	992	1,032
U.S.A.	2,400	6,543	5,826	6,629	6,389	6,649	6,322

* Relates to 1937. † British and American zones only. Figures for other zones not available.

NEW OUTPUT RECORDS have been achieved by the Skinningrove Iron Company, Limited, Yorks. In one week, 5,281 tons of steel ingots were produced, the highest figure since 1937, when output reached 5,005 tons, and in four weeks a 120-ton furnace created a new record with an output of 1,695 tons, while a 240-ton furnace produced 2,488 tons, against a previous record of 2,240 tons.

Achieving the Steel Output Target

Lord Greenwood Optimistic

Presiding at the annual meeting of Dorman, Long & Company, Limited, recently, Lord Greenwood said he believed the steel industry would succeed in reaching the 1948 target of 14 million ingot tons. This depended, however, on adequate supplies of coal and coke, scrap and other raw materials, and transport. The industry was greatly concerned about future supplies of scrap, and there was urgent need for expeditious collection and delivery to the works. Production at their works had been seriously affected by transport difficulties. In the year ended September 30 last they lost no less than 79,611 tons of finished-steel output, of which 54,743 tons was the direct result of shifts lost because of wagon shortages and rail-traffic embargoes.

Referring to the Iron and Steel Board, Lord Greenwood said that after 12 months' experience he was happy to be able to say their relations with that important body had been cordial and helpful. The production already achieved, and the steady progress made with the industry's development plans, showed that through the Steel Board the Government and the industry could achieve what was required. A realistic approach to the relations of the Government with the industry was most desirable. He said it should be practicable to devise proposals on a permanent basis which, while maintaining the benefits of private enterprise and initiative so strongly displayed in the steel industry, would give the Government effective control of general policy, a general control warranted by the happy relationship of the industry to the national economy both in peace and war.

November Iron and Steel Output

Need for Full Coke Supplies

The rate of steel production in November was the highest ever recorded for that month. Pig-iron production showed further improvement, but stocks continued to be drawn on and, if steel production is to be maintained at the 14 million-ton rate, it will be necessary to expand the output of pig-iron, which, in turn, is dependent on full supplies of coke being forthcoming.

Steel production in November was at an annual rate of 14,174,000 tons, compared with 14,316,000 tons a year in October and 13,715,000 tons in November, 1946. Pig-iron production showed an increase to an annual rate of 8,617,000 tons, compared with 8,352,000 tons in October and 8,002,000 tons a year ago.

Latest output figures compare as follow with earlier returns:—

	Pig-iron.		Steel ingots and castings.	
	Weekly average.	Annual rate.	Weekly average.	Annual rate.
	Tons.	Tons.	Tons.	Tons.
1947—1st quarter ..	134,400	6,989,000	216,000	11,231,000
2nd quarter ..	141,600	7,363,000	244,100	12,694,000
3rd quarter ..	146,700	7,628,000	235,400	12,241,000
October ..	160,600	8,352,000	275,300	14,316,000
November ..	165,900	8,617,000	272,600	14,174,000
1946—1st quarter ..	145,000	7,566,000	242,600	12,617,000
2nd quarter ..	150,500	7,827,000	252,100	13,111,000
3rd quarter ..	146,600	7,622,000	230,000	11,953,000
October ..	155,800	8,102,000	254,300	13,226,000
November ..	153,900	8,002,000	263,800	13,715,000

Disposal of Non-ferrous Semi-manufactured Material

Ministry of Supply stocks of non-ferrous semi-manufactured material will, as from January 1, be disposed of in bulk lots from time to time by competitive tendering. Any firm wishing to tender for this class of store, and not already on the department's list of firms eligible to be invited, should apply to the Directorate of Disposals/N.F.M., Room 354, Great Westminster House, Horseferry Road, London, S.W.1. The National Stock List of Ministry-owned non-ferrous semi-manufactures will no longer be issued.

AT THE LAUNCH of the Gothic (15,000 tons) from the Wallsend yard of Swan, Hunter & Wigham Richardson, Limited, for the Shaw, Savill & Albion Line, Mr. Basil Sanderson, chairman of the owners, stated that ships were now costing 2½ times as much as they did before the war. Ships were now being built on a time and materials basis and sometimes the owners found, when they received the bill, that vessels were costing 15 to 20 per cent. more than they had expected. The Gothic is the largest ship launched by Swan, Hunter & Wigham Richardson, Limited, this year.

Manufacturers and Bulk Buying

Immediate Inquiry Sought

A deputation from the National Union of Manufacturers which saw Mr. Harold Wilson, President of the Board of Trade, last week, urged an immediate inquiry into the operation of the bulk buying of raw materials. An analysis of a questionnaire sent to members of the union about their part in the export drive was submitted to the Minister. The questionnaire revealed that export business was being lost as a result of price competition from overseas manufacturers whose cost of raw materials was lower than the costs of similar materials available to the British manufacturer. Copper and other commodities were quoted as examples. It was claimed, too, that output for export was being retarded because non-arrival of materials and uncertain transport were upsetting the rhythm of production. It was further felt that British industry was not being given a fair chance in the markets of the world.

On the allocation of raw materials it was stated that the present system imposed a considerable burden on industry by reason of the vast amount of paper work, circumlocution and uncertainty of delivery, and it was suggested that allocations of materials should be generally for larger quantities and for longer periods of delivery in order to allow for the quotation of firm prices and delivery dates in the export markets based on continuity of production.

Cold-reduction Plant for Margam

The Minister of Supply announced in the House of Commons last week that the Government had now decided that the new cold-reduction plant for sheet steel should be sited at Margam, where it would be adjacent to the new hot-strip mill already approved, and would thus ensure the full advantages of closely integrated production.

This decision, Mr. Strauss stated, would involve the transfer of certain work at present being done at the Orb Works of Lysaght's at Newport, but it was not anticipated that the effects would be felt at Newport for about two years. Every effort would be made to see that alternative work became available for any men who might be displaced in Newport and district as a result of the establishment of the new plant at Margam. The employment opportunities for men to be created by the new factories and extensions now under construction in the Newport area would, when completed and in full production, exceed by a substantial margin the numbers of workers likely to be available for employment.

The Minister of Town and Country Planning and the Minister of Health were giving special consideration to the planning of the new housing facilities which would be required in the Port Talbot-Margam area.

SHIPYARD WORKERS on the Tees will have three days' holiday in Christmas week and again at the New Year.

News in Brief

THE LONDON OFFICE of the Grantham Boiler & Crank Company, Limited, is now at 36, Whitefriars Street, E.C.4.

SMITH'S DOCK COMPANY, LIMITED, are extending the capacity of their Tees-side shipyard to enable them to build bigger ships.

EMPLOYEES OF THE North British Locomotive Company, Limited, have contributed £1,511 this year to charitable institutions.

THE WORKS OF Bruce Peebles & Company, Limited, Edinburgh, will close on December 31 for the New Year holiday. They will reopen on January 6.

THE DIRECTORS OF Gascoignes (Reading), Limited, agricultural engineers, etc., state that their turnover and profit reached record levels during the year ended October 31 last.

THE CAPITAL OF THE Darrold Engineering Company, Limited, Holt Road, Blackheath, Birmingham, has been increased by £3,000, in £1 shares, beyond the registered capital of £2,000.

THE CAPITAL OF THE Campbell Engineering Company, Limited, Bromley Hill, Kent, has been increased by £19,000, in £1 ordinary shares, beyond the registered capital of £1,000.

IT IS UNDERSTOOD that the Cabinet has decided against a request by steelworkers and blast-furnacemen that heavy workers in the iron and steel trades should be given extra rations.

THOMAS SUMMERSON & SONS, LIMITED, railway fixed-plant manufacturers, of Darlington, are to open a factory at Johannesburg for the manufacture of railway switches, crossings, etc.

THE CAPITAL OF THE Kings Langley Engineering Company, Limited, Station Road, Kings Langley, has been increased by £18,000 in £1 ordinary shares, beyond the registered capital of £2,000.

A SERIES OF five explosions occurred recently at the Govan Ironworks, Glasgow, of William Dixon, Limited, when a section at the bottom of a blast furnace gave way. There were no casualties.

SHIP LAUNCHES on the River Wear for this year total 41 vessels of 194,114 gross tons; of these, 18 ships (67,975 tons) have been for foreign owners. This year's output shows a decrease of 1,500 tons, compared with the figure for 1946.

PHILIPS BLACKBURN WORKS, LIMITED, mechanical and general engineers, etc., Spencer House, South Place, London, E.C.2, have increased their capital by £450,000, in £1 ordinary shares, beyond the registered capital of £150,000.

SIEMENS BROS. & COMPANY, LIMITED, who have had a new factory built on the Hartlepools trading estate, which will employ about 2,000 women making automatic telephone exchange apparatus, have established a training school for female employees.

ALLOCATION OF SPACE in the 1948 British Industries Fair is now practically completed, and exhibitors are now being notified. Demand has been exceptionally heavy, and in London exceeded by 35 per cent. the total area available.

DESPITE THE FACT that because of the drastic shortage of coke, works were able to operate only eight months of the year, the annual report of Allied Ironfounders (Ireland), Limited, shows a profit of £7,328, which goes to the payment of the preference dividend.

BRITISH ROPEWAY ENGINEERING COMPANY, LIMITED, High Holborn, London, W.C.2, have secured a contract with the Perry Engineering Company, Adelaide, for the manufacture and erection of a 12½-mile ropeway for the Warrajamba Dam, near Sydney.

THE ANNUAL REPORT of the South Durham Steel & Iron Company, Limited, states that trading profits were affected by the limited period of operation during the year of the reconstructed heavy plate mill, which only came back into normal production in May, 1947.

PRESENTATIONS TO 36 employees of the Crane Foundry Company, Limited, Wolverhampton, whose total service is 896 years, were made recently by Mr. V. Jobson, chairman of the Qualcast group of companies which includes the Crane Foundry Company.

ONE HUNDRED AND FIFTY WORKMEN at the fitting-out quay of William Doxford & Sons, Limited, Sunderland, who ceased work on December 10, decided to return to work on December 15 on being assured that their claim for the resumption of the production bonus would be considered.

FORTY-EIGHT EMPLOYEES of Birmid Industries, Limited, received presentations at Smethwick recently to commemorate their long service. Each had been with the group for at least 25 years, and the addition of their names bring the company's roll of veteran workers to 398.

AUTOMATIC TELEPHONE & ELECTRIC COMPANY, LIMITED, Liverpool, have formed a subsidiary to handle the sale of the company's private automatic exchange and inter-communication telephone equipment, etc. Registered as Communication Systems, Limited, the new company will have a capital of £500,000 in £1 shares.

FIVE SHIPS have been ordered from Tees and Wear shipbuilders by the Counties Ship Management Company and associated companies. The Furness Shipbuilding Company, Limited, Haverton Hill-on-Tees, are to build two vessels of 16,300 tons, while Sir James Laing & Sons, Limited, Sunderland, are to build three 14,500-ton vessels.

WITH THE OBJECT of extending the productive capacities of the company and their subsidiaries, Thorn Electrical Industries, Limited, propose to increase the capital of the company to £606,250 by the issue, subject to consent of the Treasury, of 400,000 5 per cent. 2nd cumulative preference shares of £1 each. There is to be a public issue, with preferential consideration of present shareholders.

Cut down fuel costs

Save fuel in your cupolas by using STANTON sandless machine-cast pig irons.

The STANTON IRONWORKS Co., Ltd., Near NOTTINGHAM

The largest producers of foundry pig irons for the free market in Great Britian.

Company Meeting

Hale & Hale (Tipton), Limited

Mr. W. Edgar Hale's Review

The eleventh annual general meeting of Hale & Hale (Tipton), Limited, was held on Friday, December 19, at Dudley, MR. W. EDGAR HALE, M.I.Mech.E., M.Inst.F. (the chairman), presiding. The following is an extract from the chairman's review of the company's activities for the year ended August 4, 1947:—

The company's affairs have, during the course of the year, been strengthened from every point of view, which happily has been the case year after year since the very early beginnings of this business, approximately 40 years ago. It has only been by applying continuous foresight to decide how best to broaden the foundations of the business, and continuing judiciously to build thereon, that this very remarkable enterprise has been developed.

Our production of fine blackheart malleable-iron castings continues to be accepted as the very finest that is available of its kind. As a raw material to all branches of the engineering trade, and on a value-for-service basis, it is one of the cheapest commodities available in the engineering world to-day, and its measure of popularity is ever on the increase.

Service and Co-operation

Notwithstanding the difficulties experienced by foundries generally, we have been able to give that excellent service and co-operation with our customers, for which we have a unique reputation in our particular sphere. The quality of our product has been maintained at a very high standard, and our metallurgical staff are constantly engaged in research and experimental work for the improvement of castings.

Foundry work is well known to be arduous and calls for a high standard of physical fitness, which the management have always realised. They have, therefore, always felt it vitally necessary to insist on a personal contact being made with the foundry workers' problems and working conditions, with a view to alleviating as much as possible very heavy manual labour, and making conditions congenial. Considerable progress has been made in this direction already, and further improvements will shortly be forthcoming. Every opportunity is given to able-bodied young men, without previous experience, to become skilled moulders, good wages being paid during the period of training.

We have an order-book which is still heavily loaded, and in some sections have on hand in the region of two years' work. The major portion of our orders are connected directly or indirectly with export. Most of the castings we are making go into the production of light and heavy commercial vehicles, heavy industrial switchgear, agricultural machines of every description, railway rolling stocks, premanent-way material, signal gear, all types of heavy industrial plant and mining equipment. Unfortunately, we have been unable to satisfy the great demand for our product, but we view the coming year with renewed optimism, and are placing our sales targets higher than before.

We are compelled, of course, to direct our attention into those channels which we are called upon from time to time by various Government departments with whom, I am pleased to say, we work in very excellent harmony. However, I am sure that while all industrialists feel that essential controls are absolutely necessary in the present circumstances, they look forward with continued and ever-growing hope to the day when so much time need no longer be spent by valuable executives in "working controls."

Future Prospects

Whatever the future has in store, our company will fare as well as most, and, maybe, better than the majority, because our affairs are in good order, well controlled and managed in every respect, and supported by the goodwill and co-operation between the personnel and the management. We can, therefore, look forward, subject only to some unforeseen circumstance arising, to steady and successful years in the future.

Chatwins, Limited, is continuing to make very marked and steady progress in its production of "Sunbeam" household grates, ranges, and domestic heating boilers, and I do not think that I have ever known a manufacturing enterprise which had been reduced to a low level, reflect quicker to new and better ideas of management than this one. The order-book is in very good shape, and the company's appliances are recognised by customers as of very high standard, first-class design, quality, and finish, being more than comparable with any on the market. During the course of the coming year we hope to have on the market some very attractive new appliances for both cooking and heating that will be quite revolutionary.

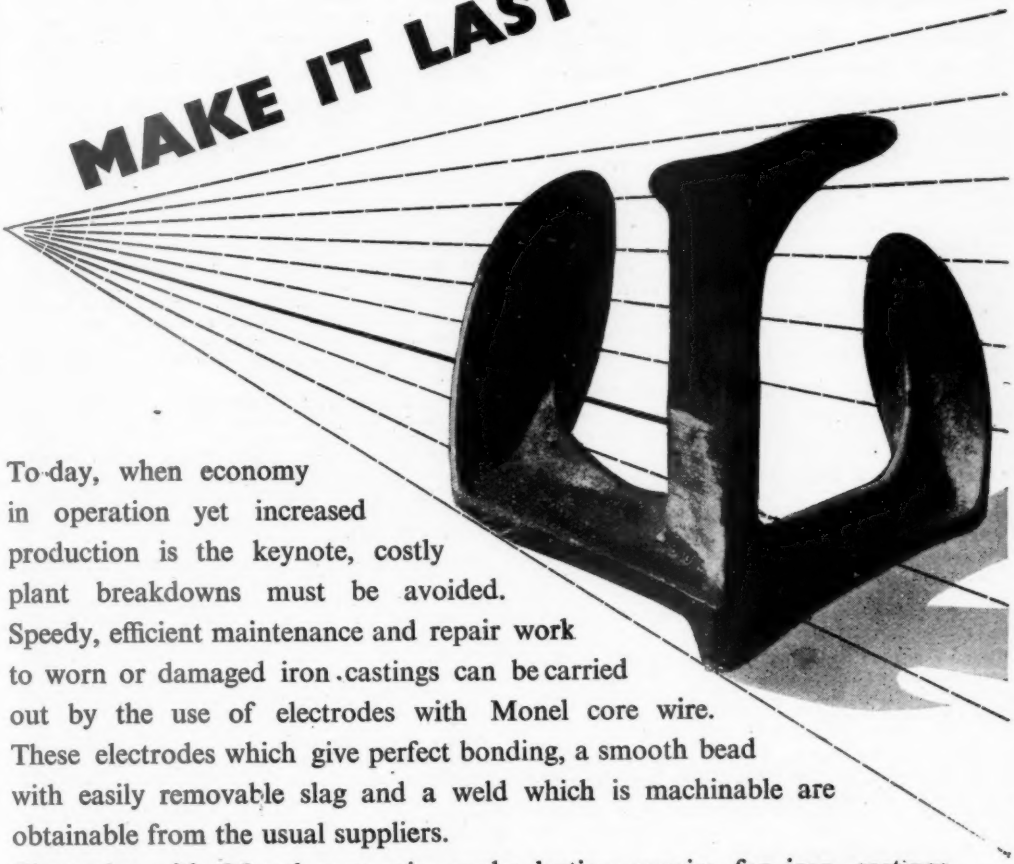
J. & J. Whitehouse (Tipton), Limited, too, can be referred to in precisely the same terms as the Chatwin subsidiary, except that it is engaged upon the production of cast-iron hollow-ware almost exclusively for tropical countries, and in its own particular sphere is making a very useful contribution to our national exports.

The trading profit amounts to approximately £25,000. Your directors have given careful consideration to what they feel should be a desirable final dividend for the year on the ordinary shares, and while recognising the ordinary-share holders have never been generously dealt with, your directors are of the opinion that they are not justified in moving away from their established policy of having a definite bias in favour of a conservative outlay in this connection. The average dividend over the years is not a high one, but during those years the company has been steadily built up and has justified its very important function of maintaining sound security and permanent employment for all who are dependent upon it for their livelihood. It has, therefore, been recommended to pay the same dividend as last year, namely, 15 per cent., making a total of 20 per cent. for the year.

During the year, negotiations have been carried through to fruition for the return to this company of that portion of our land and premises which were sold to the Ministry of Supply in 1939 for special purposes.

The report was adopted.

MAKE IT LAST



To-day, when economy in operation yet increased production is the keynote, costly plant breakdowns must be avoided. Speedy, efficient maintenance and repair work to worn or damaged iron castings can be carried out by the use of electrodes with Monel core wire. These electrodes which give perfect bonding, a smooth bead with easily removable slag and a weld which is machinable are obtainable from the usual suppliers.

Electrodes with Monel core wire make lasting repairs for iron castings.

Henry Wiggin and Company Limited

Wiggin Street, Birmingham, 16

Company News

(Figures for previous year in brackets.)

Lyon & Lyon—Interim dividend of 5% (same).

Arnott & Harrison—Dividend of 20% (same).

Heenan & Froude—Final dividend of 10% (10% and bonus of 5%), making 15% (20%).

British Insulated Callender's Cables—Interim dividend of 2% for year (4% for 18 months).

Wyndham's Marine Patents (1928)—Loss for the year ended March 31, £6,860 (profit, £4,072), increasing debit balance to £36,679.

Midland Bright Drawn Steel & Engineering Company—Final dividend of 25%, making 45%. The company was made public in January, 1947.

British Electric Transformer Company—Net profit for the year ended September 30, £79,729 (£59,645); final dividend of 10%, making 70% (50%); forward, £635 (£437).

Power-Gas Corporation—First and final dividends for the year ended September 30, 1947:—12½% on the ordinary shares 1 to 300,000 and 6½% on the ordinary shares 300,001 to 400,000.

Burt, Boulton & Haywood—Net profit for the year ended June 30, after taxation, £44,624 (£32,870); to reserves, £20,000 (£10,000); dividend of 7% (5%); forward, £20,370 (£22,086).

Shelvoke & Drewry—Net profit, after depreciation, etc., for the year ended July 31, £28,027 (£50,602); to taxation, £6,000 (£37,500); dividend of 10% on the ordinary shares (same) and of 2½% on the new ordinary shares; forward, £31,306 (£17,357).

Aston Construction Company—Trading profit for the year ended September 30, £2,705 (loss £8,239); dividends, interest, etc., £10 (£40); to directors' fees, £3,906 (same); depreciation, £1,560 (£1,637); net loss, £2,752 (£13,742); forward, £9,863 (£12,615).

Thompson & Southwick—Trading profit for the year ended August 31, £10,589 (£11,093); to directors' fees, £500 (same); depreciation, £993 (£663); net profit, £9,096 (£9,930); to taxation, £4,923 (£4,377); dividend of 10% (same); provision for deferred repairs, nil (£2,700); forward, £8,245 (£5,160).

Gascoignes (Reading)—Net trading profit for the year ended October 31, after providing for depreciation, £31,259 (£23,154); to directors' fees, £650 (same); tax, £17,450 (£10,009); staff fund, £500 (same); dividend of 15% (same) and special export bonus of 5% (same), both less tax; forward, £20,562 (£18,903).

Joshua Bigwood & Son—Trading profit to September 30, including E.P.T. refund and after profits tax and income tax, £25,163; to depreciation, £6,655; directors' fees, £750; net profit, £17,758 (£15,458); final dividend of 10%, making 15% (same); forward, £29,440 (£26,149, less £1,250 directors' special remuneration).

E. G. Brown & Company—Net profit for the year ended September 30, after depreciation, etc., £71,438 (£60,690); to provision of taxation accrued, £20,000; reserves for future income tax on profits earned, £33,000 (last year income tax and E.P.T. received £36,000); final dividend of 2.4d. per share, making 20% (same); forward, £7,594 (£14,181).

Atlas Steel Foundry & Engineering Company—Trading profit for the year ended September 30, £51,206 (£30,755); E.P.T. repayable, nil (£12,206); other income, £3,135 (£2,924); to tax, £12,500 (£10,000); deferred repairs, £12,500 (£7,500); net profit, £29,341 (£28,385); final dividend of 17½%, making 32½% (same), and bonus of 10% (same); forward, £13,928 (£11,493).

Marshall Sons & Company—Trading profit for the year ended September 30, £207,496 (£88,693); dividends, interest, etc., £10,680 (£11,948); to directors' fees, £5,375 (£5,250); depreciation, £21,767 (£13,526); taxation, £114,000 (£25,000, less E.P.T. repayable); net profit, £77,034 (£56,865); final dividend of 11¼%, making 15% (13¾%); to general reserve, £20,000 (same); forward, £77,317 (£82,524).

Birmid Industries—Dividends from subsidiary companies for the year ended October 31, £126,105 (£124,855); interest received, £4,621 (£3,695); transfer fees, etc., £96 (£108); to directors' fees, £1,200 (same); balance of administration expenses, £1,509 (£760); net profit, £128,113 (£128,218); to reserve, £21,205 (£50,000); dividend of 10% and bonus of 10% (same); forward, £59,087 (£57,669).

British Rola—Trading balance for the year ended March 31, £11,293 (£59,027); receivable on completion of Government contracts, £695 (£5,987); trading reserve no longer required, £6,742 (nil); dividends, £17,421 (£239); to directors' fees, £450 (£371); preference dividends, £2,487 (£2,299); taxation, £13,530 (£53,795); preference share redemption, £1,499 (£1,421); ordinary dividend on £157,500 capital of 10% (15% on £75,000), £8,663 (£6,188); forward, £10,642 (£1,120).

Wailes Dove Bitumastic—Trading profit to September 30 after providing for contingencies, £112,150 (£82,857); other income, £4,374 (£2,232); to taxation, £56,297 (£52,556); depreciation, £3,505 (£3,414); deferred repairs, £3,774 (£138); directors' fees, £1,200 (same); net profit, £51,748 (£27,781); final dividend of 15% (same) and bonus of 2½% (nil), making 25% (20%); general reserve, £10,000 (nil); written off goodwill, patents and trade marks, £10,000 (same); pensions, £5,000 (nil); forward, £14,100 (£11,414).

Cargo Fleet Iron Company—Profit for the year ended September 30, £163,545 (£144,823); profit from past years, £149,235 (£140,000); to debenture interest, £36,143 (£36,691); directors' fees, £1,459 (£1,500); debenture-stock trustees' remuneration, £262 (same); staff pensions, etc., £5,785 (£7,895); supplementary non-contributory pensions, £5,000 (same); debenture sinking fund, £13,113 (£12,607); taxation, £40,000 (£70,000); renewals, etc., £60,000 (nil); depreciation, £100,000 (same); dividend of 5% (same); forward, £101,701 (£100,683).

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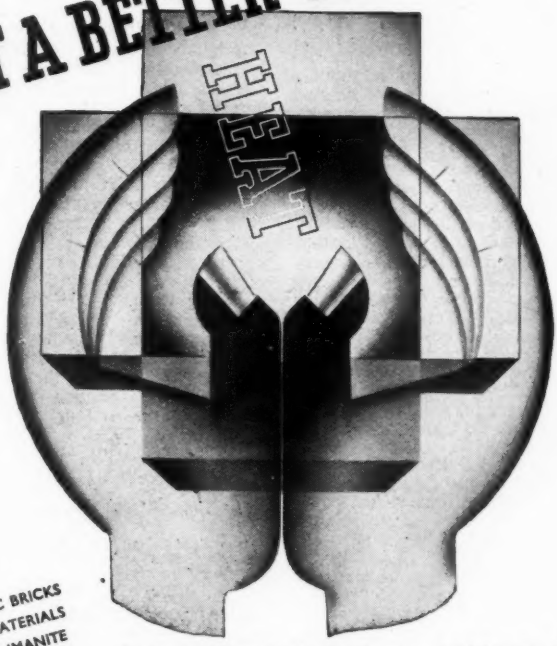

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Raw Material Markets

Iron and Steel

Foundries generally are not going to find it easy in the next few months to obtain satisfaction of their pig-iron requirements. Stringency has been felt for some time in connection with high-phosphorus iron, which is produced largely in the Northants and Derbyshire areas, and in recent weeks consumers of low- and medium-phosphorus iron and hematite have found difficulty in securing fulfilment of their licensed requirements. The Control, in order to split supplies equitably, are only allowing sufficient stocks to be held by the foundries to cover four weeks' requirements, and this will virtually amount to working from hand to mouth.

Foundries have plenty of orders on hand, but expansion will be impossible unless adequate pig-iron and scrap becomes available; the scrap position is very tight, both as regards cast iron and steel. Foundry coke is coming through in accordance with allocated tonnages, and some consumers were able to accumulate reasonable stocks in the summer when allocations were higher than at present. Some foundries also accumulated stocks of limestone, ganister and other essential requirements. Users of ferro-alloys are able to obtain supplies at reasonable notice.

Re-rollers of small bars, strip and light sections have exceptionally heavy order-books, and a large part of their production is wanted for the P.M.L. groups. Allocations for export have been poor this period, and, as yet, no information has been given as to the tonnage which can be released for Period I, 1948. Generally, much more raw material in the form of billets, blooms and sheet bars is wanted than is at present forthcoming, and this makes it impossible for works to achieve maximum output. The supply of blooms and wide slabs has been better recently, but this does not help the re-rollers of small bars who urgently need billets from 2 in. to 3 in. square and also light flat billets for strip rolling. The sheet mills are heavily booked ahead and, here again, additional sheet bars would be extremely welcome. Home makers of semis are doing everything possible, but the tonnage achieved is insufficient to keep all re-rollers fully occupied. In the meantime, the best use is being made of any defective billets and sheet bars, crops or any other form of raw material.

In view of the new arrangements which come into force at the end of Period I, in regard to allocations of supplies, consumers will, of course, press for deliveries before the revised conditions operate. All the steelworks are over-loaded with specifications. This is particularly evident in connection with steel plates and medium and heavy sections, and a considerable amount of the present output is absorbed by priority users, making it very difficult for consumers outside these classifications to satisfy their needs.

Non-ferrous Metals

The severity of the recent advance in the price of tin from the consumers' point of view must not be discounted because forecasts pointing to a quotation of £500 per ton have turned out to be approximately correct. It is no doubt true that £500, or something very close to it, was expected, but tin users have awaited the change in a spirit of resignation and not by any means in one of joyful anticipation. Tin stands now at a level more than high enough to discourage its use and, consequently, it will be difficult to recapture the ground lost during the war, when, with supply areas in the Far East occupied by the Japanese, it became necessary to look for substitutes over a wide field. That this search was highly successful cannot be doubted, and the price of the metal will have to be drastically reduced if these changes are to be reversed.

But for the present, the trend is still in an upward direction, for the Far-Eastern producers are understood to be far from satisfied with the new price the Ministry of Supply is prepared to pay for tin metal in ore. For the Malayans this has been fixed at £500 a ton, ex smelters' works (Penang or Singapore), and for Nigerian, £477 a ton of tin in ore, f.a.s. Nigerian port. In regard to the Chinese mines, it is reported that 80 per cent. are operating at a loss, and it is contended that this increase, although substantial, is not enough to put matters right for them. One of the most surprising things about the timing of the Ministry's announcement is the fact that apparently the negotiations between the United States and the Bolivian producers have not yet been finalised. At 80 cents the American consumer is very much better placed than the British user, and while an advance in the cent price is, of course, inevitable, it should be noted that on this occasion the sterling price is showing the way.

Contracts Open

Any date given is the latest on which tenders will be accepted. The address is that from which forms of tender may be obtained.

Birkenhead, January 12—Supply of iron castings and miscellaneous wrought iron and steel fabric reinforcement, etc., for the Corporation. The Borough Engineer and Surveyor, Town Hall, Birkenhead.

Lichfield, January 10—Gully and manhole castings, etc., for the City Council. Mr. A. N. Ballard, town clerk, The Guildhall, Lichfield.

Melford, January 7—Supply of 100 water meters, etc., for the Rural District Council. Mr. J. A. Shaw, clerk of the Council, Chilton House, Newton Road, Sudbury. Suffolk.

Tralee, January 13—Provision and laying of 852 yds. of 8-in. cast-iron water main, 3,873 yds. of 6-in. cast-iron water main, 1,948 yds. of 4-in. cast-iron water main, and other sewers, for the Urban District Council. Mr. C. T. Kennedy, clerk of Council, Urban Council Chambers, Tralee. (Fee £50, returnable.)

Warrington, February 9—Construction of approx. 8,000 yds. of 57-in., 42-in., 33-in., 30-in., 21-in. and 18-in. concrete pipe sewers; 1,530 yds. of 21-in. and 18-in. spun-iron pipe sewers and 370 yds. of 12-in. stoneware pipe sewers, etc., for the Corporation. John Taylor & Sons, Artillery House, Westminster, London, S.W.1. (Fee £5, returnable.)

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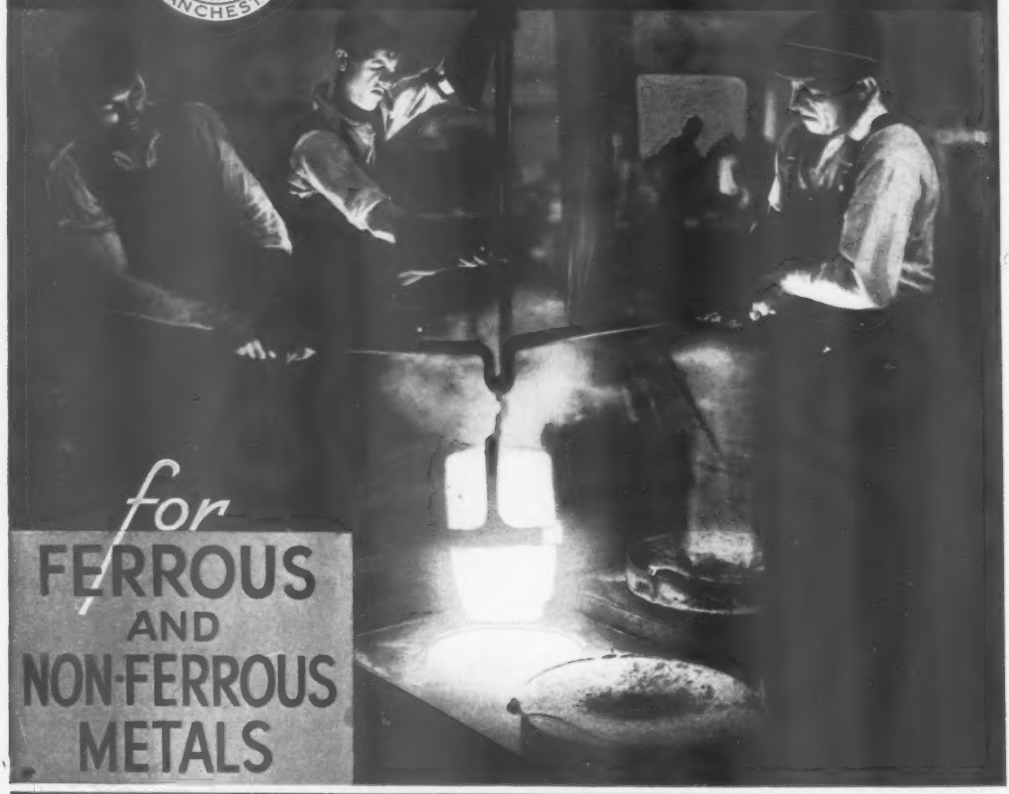

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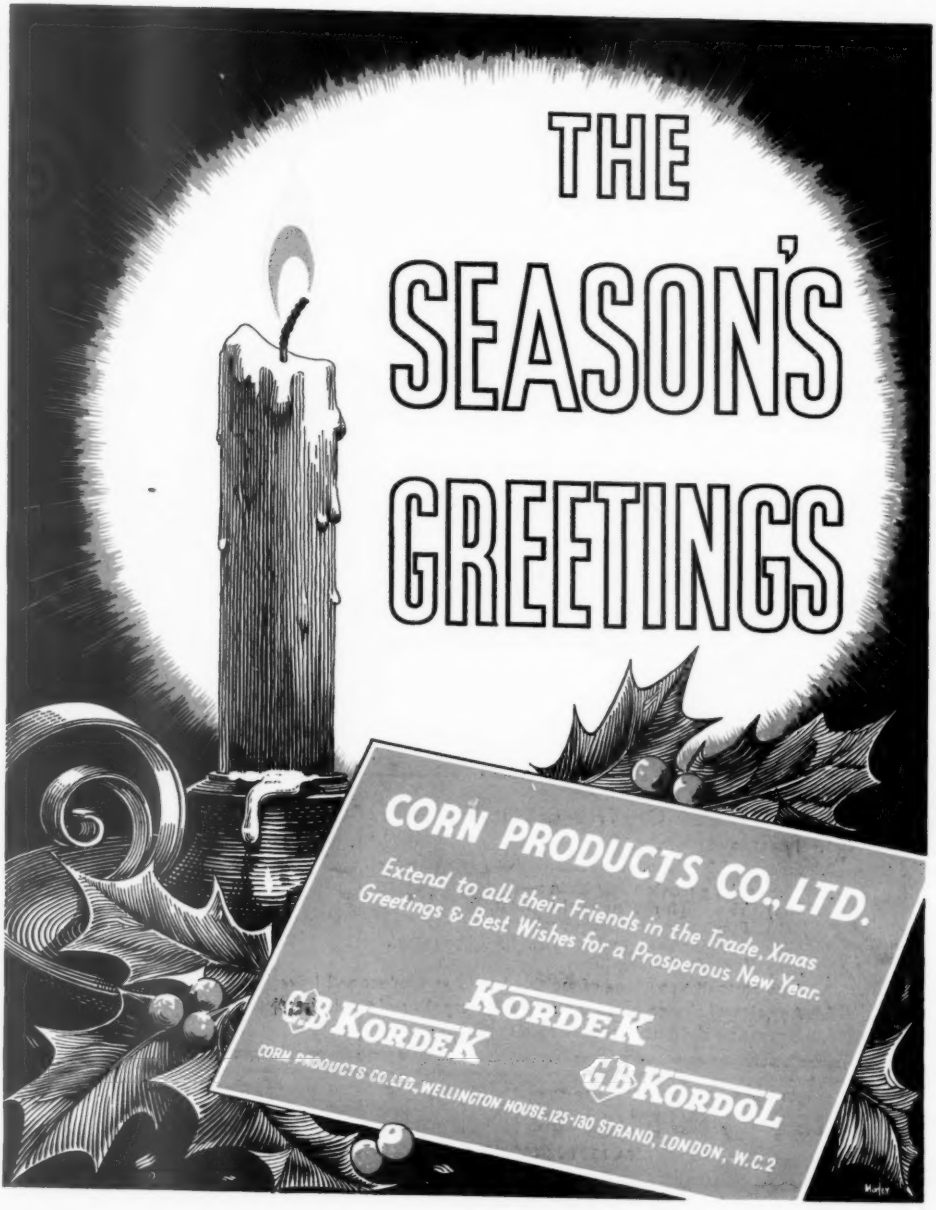
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